

REMARKS*Amendments to the Claims*

Claim 1 is amended to include the recitation that the low concentration level of oxidizable contaminant in the gas stream is less than 3000 ppt. Support for this amendment is found in the elements of claim 15, and in the specification at paragraphs [0007] and [0011]. Claim 1 is also amended to remove the recitation at the end of step a).

Claim 3 is amended to depend from Claim 1 instead of Claim 2. Claims 3-6 are also amended to include the recitation that “the low concentration level is less than” 1000 ppt, 500 ppt, 100 ppt, and 10 ppt, respectively. Support for this amendment is found in the application at paragraph [0016] (stating the particular contaminant levels) and paragraph [0011] (setting forth a specific example).

Claim 7 is amended to clarify the language of the claim.

Claim 16 is amended to include the recitation that “the method detects and quantifies at least one oxidizable contaminant from a plurality of oxidizable contaminants in said gas stream.” Support for this amendment is found in the application at paragraph [0016] (noting that the method can be used for “an oxidizable contaminant or contaminants”).

Claims 17 and 19 are amended into independent claims, utilizing the recitations of the claims from which they formerly depended. Claim 18 is amended to conform with the new language utilized in Claim 17, from which Claim 18 depends.

Claim 20 is amended in accordance with amended Claim 1, and rephrased to clarify the meaning of the claim.

The amendments to the claims contain no new matter.

Allowable Subject Matter

Pending claims 17-19 are objected to as being dependent from a rejected base claims, but are allowable if rewritten into independent from including all the limitations of the base claim and any intervening claims. Claims 17 and 19 are amended into independent claims; their allowance is requested. Claim 18 depends from Claim 17, and is now allowable for substantially the same reasons.

Cited Art Rejections

Pending Claims 1-16 and 20 stand rejected under 35 U.S.C. §103(a) as being unpatentable over Bies (U.S. Patent No. 2,364,940) and Oh et al. (U.S. Patent No. 5,736,104). The Claims all depend ultimately from Claim 1, which is currently amended to include the recitation that the concentration of oxidizable contaminant in the gas stream is less than 3000 ppt. Bies and Oh provide absolutely no teaching, suggestion, or motivation to detect an oxidizable contaminant at concentrations less than 3000 ppt by quantifying the oxidation product from the contaminants. As such, Claim 1 and all claims dependent therefrom are patentable.

Bies is directed to using a high frequency current to induce oxidation of combustible gases from soil. As stated in the Office Action, "Bies teaches a methodology for the quantitative analysis of a gas sample comprising hydrocarbons in concentrations of approximately 20 part per million." Bies, however, provides no teaching, suggestion, or motivation that detection of minute quantities of oxidizable contaminants may be magnified by analyzing the more readily detected and quantified products from oxidizing such contaminants. More particularly, Bies provides no teaching, suggestion, or motivation that levels of oxidizable contaminants less than 3000 ppt, below the real time detection limit for monitoring hydrocarbons at the filing of this application, may be detected and quantified by detecting the products from oxidizing such low levels of contaminants. To modify Bies to arrive at the teachings of amended Claim 1 constitutes nothing less than improper hindsight of the teaching of the application that more readily detectable oxidation products may be observed to identify and quantify less detectable oxidizable species.

Oh is directed solely to the teaching of transition metal oxides to increase the rate of reaction of non-methane hydrocarbons. Oh is directed to detecting the heat of reaction to determine the presence of hydrocarbons. As well, the only concentration limit of detection discussed by Oh is related to the hydrocarbon detection requirement of 100 ppm (see column 1, line 48). Oh provides no teaching, suggestion, or motivation of detecting the actual products of oxidation to arrive at the initial oxidizable contaminant concentration, or the ability to detect

oxidizable contaminants below 3000 ppt. As such, Oh, alone or in combination with Bies, cannot render Claim 1 obvious.

Claim 2-16 and 20 all depend from Claim 1 and are allowable for substantially the same reasons as Claim 1. In particular, Claims 3-6 are allowable since the cited art provides no teaching, suggestion, or motivation to detect oxidizable contaminants at or below the concentration levels recited in the claims.

New Claims 21 - 27

New Claims 21 – 25 are submitted for consideration. Claim 21 is similar to Claim 17, except that (i) the recitation regarding the oxidized product “whose presence is more readily detected and quantified than is the oxidizable contaminant . . .” is removed; and (ii) Claim 21 recites quantifying and oxidizing a contaminant. Claim 21 is patentable for the same reasons that Claim 17 is allowable. Removal of the recitation does not affect the patentability of the Claim 21 since Claim 21 maintains all the elements important to its patentability as noted in the Allowable Subject Matter section of the Office Action regarding Claim 17. Claim 22 depends from Claim 21, and adds the limitation that more than one contaminant is completely oxidized. Claim 22 is patentable for the substantially the same reasons that Claim 21 is patentable.

Claims 23 and 24 are similar to Claims 18 and 19, respectively. Claims 23 and 24 also remove the recitation regarding the oxidized product being more readily detected and quantified than the oxidizable contaminant. They are patentable since the Claims maintain all the patentable features as stated in the Allowable Subject Matter section of the Office Action regarding Claims 18 and 19.

Claim 25 is a new claim that is similar to Claim 1, and also includes (i) an oxidation catalyst (e.g., see Claim 8); (ii) recites a heavy hydrocarbon contaminant for the oxidizable contaminant (support is found at paragraph [0013] of the application); and (iii) the oxidation reaction effects “complete oxidation of . . . [the] hydrocarbon contaminant to carbon dioxide and water” (support is found at paragraph [0011] of the application, noting that complete oxidation of a hydrocarbon means that carbon dioxide and water are produced). Claim 25 is patentable for substantially the same reasons as Claim 1.

Claim 26 is a new claim that is similar to Claim 1 except that the low concentration level is defined to be “below a detectable concentration limit of the oxidizable contaminant using flame ionization detection.” Support for this Claim is found in the application at paragraph [0007] (stating flame ionization detection (FID) is the limit in hydrocarbon content monitoring) and paragraph [0011] (showing an example where a contaminant may be detected with a concentration below the detection limit using FID). Claim 26 is patentable for substantially the same reasons that Claim 1 is patentable.

Claim 27 is a new claim similar to Claim 1 except that (i) the oxidation reaction on the oxidizable contaminant is “under conditions sufficient to produce carbon dioxide and water,” and (ii) at least one of the carbon dioxide and water are quantified and used to determine the oxidizable contaminant concentration. Support for this Claim is found in paragraph [0011] of the application (noting that complete oxidation of a hydrocarbon means that carbon dioxide and water are produced, and noting the increased detection limits of carbon dioxide and water). The claim is patentable for substantially the same reasons that Claim 1 is patentable.

CONCLUSION

In view of the above amendments and remarks, it is believed that all claims are in condition for allowance, and it is respectfully requested that the application be passed to issue. If the Examiner feels that a telephone conference would expedite prosecution of this case, the Examiner is invited to call the undersigned.

Respectfully submitted,

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Dated:

4 April 2005